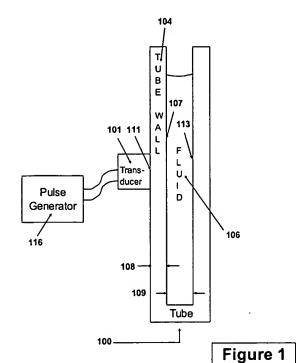
INVENTOR: Rocco DiFoggio
TITLE: Method and Apparatus For An Acoustic Pulse...
ATTORNEY: G. Michael Roebuck TELEPHONE NO.: 713-266-1130
EXPRESS NO.: EV369817945US DOCKET NO.: 584-30656-US

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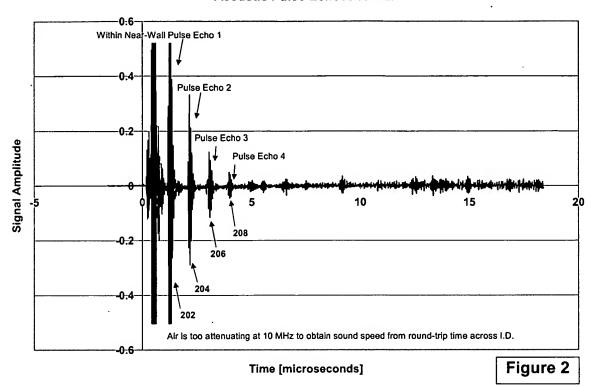
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Acoustic Pulse Echoes for Air



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TITLE:

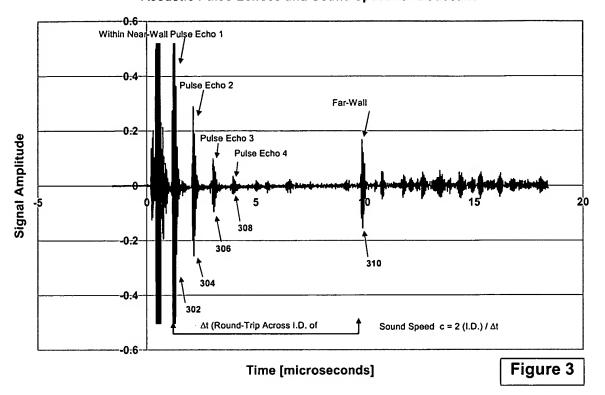
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SHEET 3 OF 9

Acoustic Pulse Echoes and Sound Speed for Dodecane



Rocco DiFoggio

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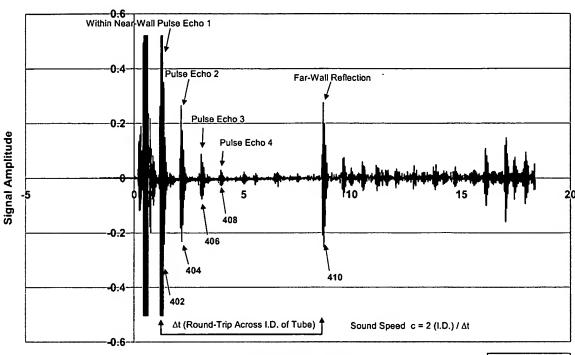
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Acoustic Pulse Echoes and Sound Speed for Water



Time [microseconds]

Figure 4

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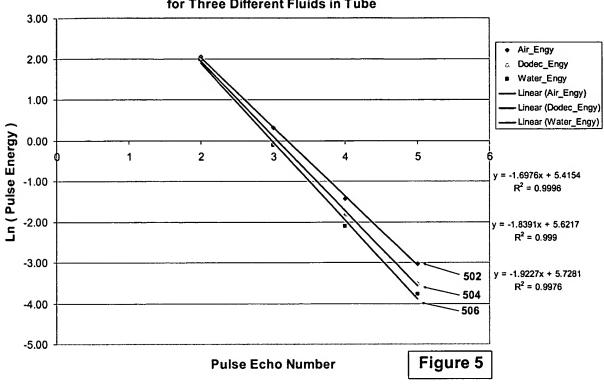
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SHEET 5 OF 9

Integrated Acoustic Pulse Echo Slopes for Three Different Fluids in Tube



Rocco DiFoggio

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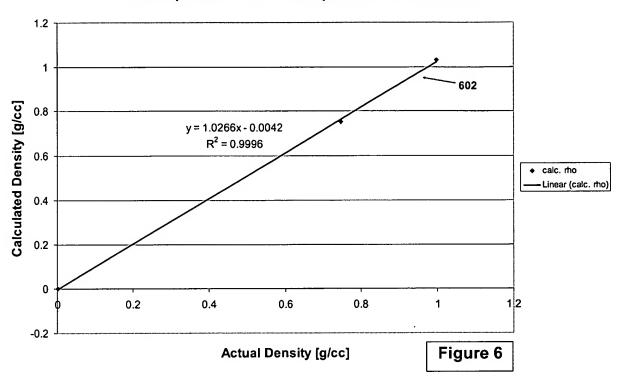
ATTORNEY: **EXPRESS NO.:**

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Comparison of Calculated to Actual Rho when Assume that Slope of Air-Filled Tube Represents 100% Reflection



Rocco DiFoggio

TITLE:

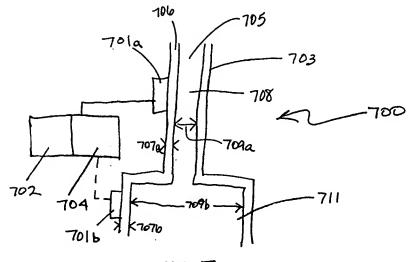
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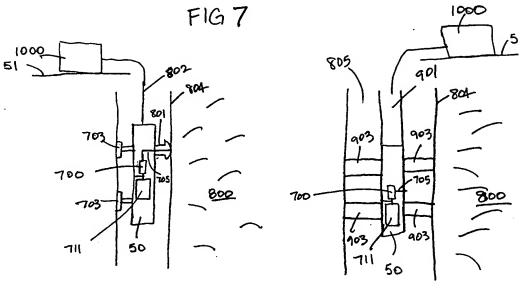


FIG.8

F1G.9

INVENTOR: TITLE:

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Expose Fluid to Sensor

- 1001

Send Acoustic Pulse into Near Wall

__ 1003

Integrate Energy within Each Pulse Echo

1005

Determine Fluid's Impedance from Reflection at Near-Wall / Fluid Interface

1007

Calculate Sound Speed in Fluid

1009

Determine Density of Fluid

1011

Determine Viscosity of Fluid

1013

Figure 10

Rocco DiFoggio

TITLE:

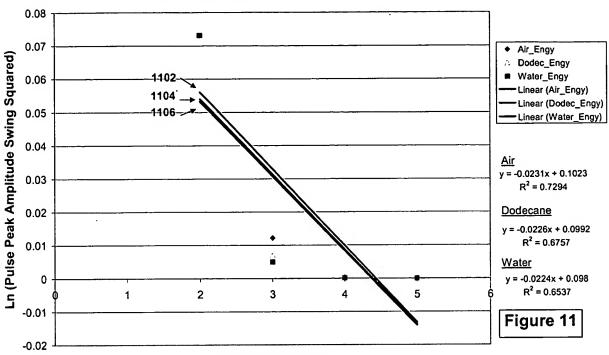
Method and Apparatus For An Acoustic Pulse...

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Non-Integrated Acoustic Pulse Echo Slopes for Three Different Fluids in Tube



Pulse Echo Number